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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,229

10/24/2005

Ali Chaouche

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10/11/2006

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EXAMINER

TRAN, DIEM T

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/532,229

Applicant(s)

CHAOUCHE ET AL.

Examiner

Diem Tran

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5 and 7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### DETAILED ACTION

This office action is in response to the amendment filed on 7/14/06. In this amendment, claims 1, 4, 7 have been amended and claims 3, 6 have been canceled. Overall, claims 1, 2, 4, 5, 7 are pending in this application.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1, 2, 4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro et al. (US Patent 6,901,747) in view of Tonetti et al. (US Patent 6,666,020).***

Regarding claim 1, Tashiro discloses a system for assisting regeneration of a storage/release NOx trap integrated in an exhaust line of a motor vehicle diesel engine, the system comprising:

gas admission means for admitting gas into the engine, means for injecting fuel into the cylinders thereof in the form of at least pilot and main injections, and means for controlling said gas admission for periodically switching the engine between a lean mixture standard operating mode in which NOx is stored in the trap and a rich mixture regeneration operating mode, in which NOx is released from the trap and the trap is regenerated, wherein in a rich-mixture regeneration operating modes the injection means are suitable for implementing at least one pilot injections triggered in a crankshaft angle range from approximately 50° to approximately 5°

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ahead of the top dead centre point of the cylinder concerned and the main injection is triggered in an undercalibrated range up to a crankshaft angle of approximately 35° after the top dead center point (see Figure 5A, col. 14, lines 28+); controlling the fuel injection means in accordance with the standard and regeneration modes of operation for engine loads below a predetermined threshold value (i.e. idling operation) (see col. 19, lines 55-64); however, fails to disclose that one more pilot injection is injected before main injection. Tonetti teaches that at least two pilot injections are injected into the engine in order to condition a combustion chamber for complete combustion of a main fuel injection (see Figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Tonetti in the Digeser system, since the use thereof would have maintained drivability of a vehicle during regeneration of a NOx trap.

Regarding claim 2, Tashiro further discloses that the control means are adapted to control the gas admission means to reduce the quantity of gas admitted into the engine when said engine is in its regeneration mode of operation (see col. 14, lines 28-34, col. 20, lines 56-65).

Regarding claim 4, the modified Tashiro system discloses all the claimed limitations as discussed in claim 1 above, however, fails to specifically disclose the predetermined load threshold value is defined by a brake mean effective pressure of approximately 3 bars.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum load threshold value, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 7, the modified Tashiro system discloses all the claimed limitations as discussed in claim 1 above, however, fails to specifically disclose operating the engine with a lean mixture for approximately 60 seconds and with a rich mixture for approximately 2 seconds.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum lean time and rich time for operating the engine, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

***Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro et al. (US Patent 6,901,747) in view of Tonetti et al. (US Patent 6,666,020) as applied to claim 1 above, and further in view of Digeser et al. (US Patent 6,082,325).***

The modified Tashiro system discloses all the claimed limitations as discussed in claim 1 above, however, fails to disclose the engine being associated with means for recirculating exhaust gas to its inlet side, and regulating the operation of the recirculation means during operation of the engine with a rich mixture. Digeser teaches regulating the operation of the exhaust gas recirculation during operation of the engine with a rich mixture (see col. 1, lines 41-60, col. 9, lines 14-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Digeser in the modified Tashiro system, since the use thereof would have been conventional in the art to control the composition of the air admitted into the engine to assist the regeneration of the NO<sub>x</sub> trap.

***Response to Arguments***

Applicant's remarks filed on 7/14/06 have been fully considered. Upon further search and consideration, the examiner has withdrawn the indicated patentable subject matter; however, a new non-final rejection is set forth above.

***Conclusion***

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:30 a.m.- 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).



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Patent Examiner  
Art unit 3748

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